

CLAIMS

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1. Gene encoding a protein having aromatic acyl group transfer activity or a derivative thereof having said enzymatic activity.

5 2. The gene according to claim 1 obtainable by cloning using as the primer a nucleotide sequence encoding the amino acid sequence as set forth in SEQ ID No. 21.

10 3. The gene according to claim 2 wherein said primer has the nucleotide sequence as set forth in SEQ ID No. 22.

15 4. The gene according to claim 1 or 2 encoding any of the amino acid sequences as set forth in SEQ ID No. 1 to 6, or a modified amino acid sequence in which the above amino acid sequence has been modified by addition or removal of one or more amino acids, or substitution with other amino acid(s).

20 5. The gene according to claim 1 or 2 encoding a protein, which gene ~~hybridizes~~ ^{is capable of hybridizing} with part or all of the nucleotide sequence encoding any of the amino acid sequences ^{of} as set forth in SEQ ID No. 1 to 6 under the condition of 5 x SSC and 50°C, and which protein has aromatic acyl group transfer activity.

25 6. The gene according to claim 1 or 2 encoding a protein, which gene ~~hybridizes~~ ^{is capable of hybridizing} with part or all of the nucleotide sequence encoding any of the amino acid sequences ^{of} as set forth in SEQ ID No. 1 to 6 under the condition of 2 x SSC and 50°C and which protein has aromatic acyl group transfer activity.

30 7. The gene according to claim 1 or 2 encoding a protein which has an amino acid sequence having a homology of at least 15% or higher with any of the amino acid sequences ^{as} as set forth in SEQ ID No. 1 to 6, and which has aromatic acyl group transfer activity.

35 8. The gene according to claim 1 or 2 encoding a protein which has an amino acid sequence having a homology of at least 30% or higher with any of the amino

acid sequences as set forth in SEQ ID No. 1 to 6, and which has aromatic acyl group transfer activity.

9. A vector comprising a gene according to any of claims 1 to 8.

10. A host transformed with a vector according to claim 9.

11. A host according to claim 10 wherein said host is a microbial or animal cell.

12. A host according to claim 10 wherein said host is a plant cell or a plant body.

13. Protein encoded by a gene according to any of claims 1 to 8.

14. Protein having aromatic acyl group transfer activity produced by the process of affinity chromatography of a crude enzyme extract of a plant with a resin on which Cibacron Blue 3GA is immobilized.

15. Protein capable of specifically binding to an antibody to the protein of claim 13 and which has aromatic acyl group transfer activity.

16. A method for producing a protein having aromatic acyl group transfer activity wherein a host according to claim 10 is cultured or grown, and then a protein having aromatic acyl group transfer activity is recovered from said host.

17. A method for producing a protein having aromatic acyl group transfer activity wherein a crude enzyme extract of a plant is treated with an affinity chromatography using a resin on which Cibacron Blue 3GA is immobilized.

18. A method for producing a protein having aromatic acyl group transfer activity, comprising the step of specifically binding to an antibody to the protein of any of claims 13 to 15.

19. A method for acylating a pigment, comprising bringing said pigment to the action of the protein of any of claims 13 to 15.

20. A method for acylating a pigment in a plant,

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comprising the steps of introducing a gene according to any one of claims 1 to 8 into the plant, allowing said gene to express, and acylating the pigment in the plant with the protein produced.

5 21. A method for stabilizing a pigment wherein said pigment is acylated by the action of the protein according to any of claims 13 to 15.

10 22. A method for stabilizing a pigment in a plant, comprising the steps of introducing the gene according to any of claims 1 to 8 into a plant, allowing said gene to express, and acylating the pigment in the plant with the protein produced.

15 23. A method for controlling the color of flowers, comprising the steps of introducing the gene according to any of claims 1 to 8 into a plant, allowing said gene to express, and acylating the pigment in the plant with the protein produced.

Sub 73 24. The method according to any of claims 19 to 23 wherein the pigment is anthocyanin.

20 25. A plant whose color has been controlled by introducing thereinto a gene according to any of claims 1 to 8, or its progeny having the same property, or tissues thereof.

25 26. The plant tissue according to claim 25 wherein said tissue is a flower.

Sub 73 27. A cut flower of the plant according to claim 25 or its progeny having the same property.

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